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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/693,603	10/27/2003	Jan Evert Van Der Werf	081468-0306523	6464

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EXAMINER

ALLAWI, ALI

ART UNIT	PAPER NUMBER
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2877

DATE MAILED: 12/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/693,603	Applicant(s) WERF ET AL.	
	Examiner ALI ALLAWI	Art Unit 2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/27/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

The Information Disclosure Statement filed 27 October 2003 has been entered and the reference(s) considered by the examiner.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) The invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-10, and 12-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Maurer (6,691,052).

In regards to claim 1, Maurer discloses an apparatus and a method for detecting defects in a patterning device of photolithography that comprises printing a reference pattern on a reference substrate using a patterning device, printing a pattern for manufacture on a production substrate, printing a test substrate, and comparing the printed test pattern to the printed reference pattern to detect defects. (Col. 1: 5-22, Col. 3: 5-15)

In regards to claims 2 and 3, Maurer discloses a reference substrate that is a silicon wafer comprising an integrated circuit and it is inherent in the art that the

integrated circuits comprise of a SiO₂ with a printed reference pattern is etched into the SiO₂. (Col. 1: 17-20, 30-35, Col. 6: 40-41)

In regards to claims 4 and 5, Maurer discloses a test substrate that is used as a reference having a pattern on photo-resist. (Col. 1: 24-30, Col. 6: 66-67)

As to claims 6 and 7, Maurer discloses a reference pattern that is printed at a plurality of different locations on the reference substrate wherein the individual printed reference patterns are spaced such that individual test patterns can be printed beside each other. (See Col. 8: 35-44)

In regards to claims 8-10, Maurer discloses the method listed above, wherein in the comparison process the patterned test substrate and reference substrate are scanned by an optical defect system and scanned simultaneously by respective optical defect inspection tools. Maurer further discloses multiple comparisons to take place between multiple reference patterns and test patterns. (Col. 1: 52-62, 66-67, Col. 2: 1-10)

As to claim 12, Maurer discloses a patterning device to be a photolithographic mask. (Col. 1: 30-40)

In regards to claims 13 and 14, Maurer discloses an inspection system that comprises an inspection tool for inspecting first and second patterns and a device to compare the two. Maurer further discloses an inspection tool for inspecting first and second patterns simultaneously. (Col. 2: 1-10, Col. 3: 26-43, Col. 5: 16-22)

In regards to claims 15 and 16, Maurer discloses a computer system and program that comprises instructing the lithographic apparatus to print a reference

pattern on a reference substrate and to print a test pattern on the same reference substrate at a later time. Maurer further discloses a computer program and code for inspection of the first and second patterns and conduct a comparison between the two patterns. (Col. 4: 16-30)

In regards to claim 17, Maurer discloses a reference substrate that comprises a substrate with a printed reference image of a pattern. It is further understood that an inherent property of an inspection lithographic apparatus is to have a no further patterned layers above the reference image to be used in order to allow for accurate and complete reflection and reading of the pattern. (Col. 4: 9-15)

In regards to claim 18, Maurer discloses an integrated circuit as well as a photo mask to be analyzed. It is inherent that integrated circuits are etched on silica material or a layer of SiO₂. (Col. 1: 20-30, Col. 6: 40-41, 66-67, Col. 7: 1-2)

In regards to claims 19 and 20, Maurer discloses a pattern printed on a number of different locations on the reference substrate where in the individual printed patterns are spaced such that an individual test pattern can be printed beside each individual printed reference. (Col. 8: 35-44)

In regards to claim 21, Maurer discloses an apparatus and a method of detecting defects in a photolithographic patterning device that comprises generating a reference pattern on a first substrate, generating a pattern on a second substrate, and comparing the reference pattern on the first substrate to the pattern on the second substrate to detect defect. (Col. 1: 15-30, 66-67, Col. 2: 1-10)

In regards to claims 22 and 23, Maurer discloses a method of detecting defects in a patterning device wherein the pattern is a test pattern and the second substrate is a test substrate. Maurer further discloses the pattern to be a test pattern and the second substrate to be the first substrate. (Col. 2: 1-10)

In regards to claim 24, Maurer discloses a method of detecting the defects in a patterning device in which the pattern comprises features of a manufactured device and the second substrate comprises the manufactured device. (Col. 3: 1-10, Col. 5: 15-22, 52-60)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maurer (6,691,052) in view of Pietzsch et al. (4,692,943)

As to claim 11, Maurer discloses everything claimed, as applied above, with the exception for determination of the location of the defect in the patterning device being done through majority voting method. Pietzsch discloses a pattern inspection system in which majority vote is used to determine the location of the defect in the patterning device. (See Col. 10: 7-14) It would have been obvious at the time the invention was made to utilize the majority vote for determination of the defect location for increased correlation of the points and enhanced accuracy.

Additional Prior Art

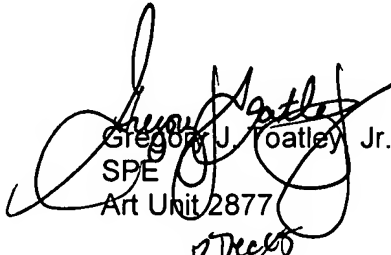
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The references listed in the attached form PTO-892 teach of other prior art that may anticipate or obviate the claims of the applicant's invention.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ali Allawi whose telephone number is **571 272 8285**. The examiner can normally be reached on Monday through Friday, 8am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on **571 272 2800 ext. 77**. The fax phone number for the organization where this application or proceeding is assigned is **571 273 8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Gregory J. Toatley, Jr.
SPE
Art Unit 2877
12 Dec 00